



PIER Energy System Integration Program Area

Development of a Real-Time Monitoring/Dynamic Rating System for Overhead Lines

Contract #: 500-98-034

Contractor: Engineering Data Management, Inc.

Subcontractors: Power Line Systems, Inc.; Southwest Research Institute: Electric Power Research Institute (EPRI)

Contract Amount: \$499,402

Match Amount: \$12,000

Contractor Project Manager: Andrew Stewart (970) 204-4001

Commission Contract Manager: David Chambers (916) 653-7067

Status: Completed

Project Description:

The overall objective for the project was to develop a system with sensors for monitoring ground clearances/sags in selected spans on a real-time basis coupled with software to model the clearances/sags in all spans that can provide a real-time rating for the line. The technical performance objectives of this project were to develop a practical, user-friendly and cost effective transmission-line monitoring system with the flexibility and features needed to work with existing and state-of-the-art transmission systems. The goal for the line rating software design was to enable the system to be used by transmission system operators, including utilities and the Independent System Operator (ISO) for three purposes: 1) real-time monitoring/dynamic rating of lines, 2) studies to evaluate the performance of existing lines and to re-rate their capacity, and 3) monitoring the status of clearances/sags in "safety critical" areas.

This project supports the PIER Program objectives of:

- Improving the reliability/quality of California's electricity by providing a system to reduce power outages caused by sagging lines.
- Improving the energy cost/value of California's electricity by improving the efficiency and power carrying capability of monitored lines and reducing costs of power delivery.
- Improving the environmental and public health costs/risks of California's electricity by reducing the need for new transmission corridors and avoiding fires.
- Improving the safety of California's electricity by monitoring transmission line-to-ground clearance thereby avoiding an electrical shock hazard.

Proposed Outcome:

1. Develop a system with sensors for monitoring ground clearances/sags in selected spans on a real-time basis coupled with software to model the clearances/sags in all spans that can provide a real-time rating for the line.

Actual Outcomes:

1. Successfully completed design, development and analysis of the Saggometer Sensor System.
2. The Saggometer Sensor System performed real-time monitoring and dynamic rating of lines.
3. Developed a real-time rating software module (PLS-CADD).

Project Status:

Project is complete.

Final Report Title: Development of a Real-Time Monitoring/Dynamic Rating System for Overhead Lines

PIER Publication Number: 500-04-003

PIER Web Location: please right click on www.energy.ca.gov/pier/final_project_reports/500-04-003.html